

New ARSAC Notes for Guidance published

The ARSAC Notes for Guidance on the Clinical Administration of Radiopharmaceuticals and Use of Sealed Radioactive Sources have recently been updated. The current version (January 2016 edition) is now available on the ARSAC website at

<https://www.gov.uk/government/publications/arsac-notes-for-guidance>.

The main changes from the 2006 edition are:

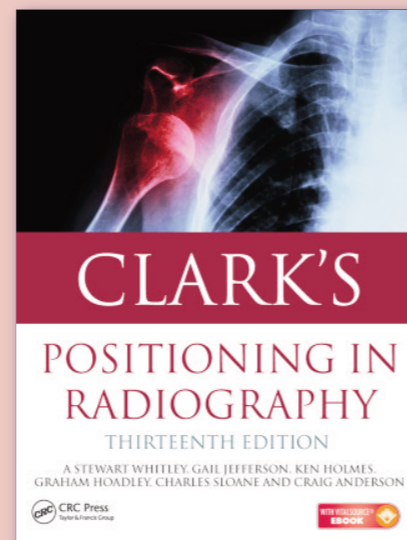
- Section 2 now reflects the changes to the ARSAC application forms for full, renewals, additions, urgent and research certificates from October 2014. The supporting staff signatures required (Parts C5 and C6) must be local to the site. All applications made on the old style of form will be returned.
- Section 4 has been updated to give further guidance on applications for therapy certificates.
- Section 5 has been updated to give further guidance on applications for research certificates made through IRAS.
- Minor changes have been made to the paediatric guidance in Section 6. Until further research is available, ARSAC recommends continuing use of the existing method of activity calculation published in the ARSAC Notes for Guidance for all investigations apart from 18F-FDG PET-CT. Centres using 18F-FDG in paediatric patients are encouraged to optimise the administered activity based on equipment settings and clinical reporting preferences (see the ARSAC newsletter from May 2013).
- Appendix I includes revised dosimetry estimates in line with ICRP 128. The revised model of thyroid uptake significantly increases the effective dose from diagnostic investigations using I-123 and I-131 iodide.
- Appendix V has been updated to reference the current relevant legislation. References to out-of-date transport regulations have been removed (guidance on current transport regulations should be sought from the appropriate agency).
- References have been updated as appropriate.

Hard copies of the ARSAC Notes for Guidance will no longer be published and the edition on the website will be the most up-to-date version available. Updates will be described in a regular ARSAC Newsletter, along with implications for ARSAC certificate holders. RPC encourages its readers to make themselves familiar with the new guidance. Please contact RPC (info@sghrpc.co.uk) if you require further information.

RPC News is now available online

Avid readers will be pleased to learn that RPC News is now available in electronic format from our website. A pdf version of the newsletter can be downloaded at www.sghrpc.co.uk via the "RPC News" tab at the top right hand side of the webpage. Previous issues are also available online. We hope that this will increase accessibility of the newsletter, especially for sites with a large number of employees. We shall continue to send out a paper copy of RPC News to all our customers. If you would prefer not to receive a paper copy please e-mail info@sghrpc.co.uk and we will update the distribution list.

New Clark's Positioning in Radiography published



Readers may be interested to know that the new Clark's Positioning in Radiography (13th Edition) has now been published. It includes new and updated sections on diagnostic reference levels, bariatric radiography, tomosynthesis and paediatric radiography. The paediatric chapter supersedes the Guidelines on the X-ray Imaging of Children which were developed by RPC in conjunction with Queen Mary's Hospital for Children. It covers digital imaging technology as well as its clinical applications. It also includes advice on radiation protection measures and guidance on dose reference levels for specific examinations. Useful guidance on positioning errors and how to avoid mistakes is also provided.

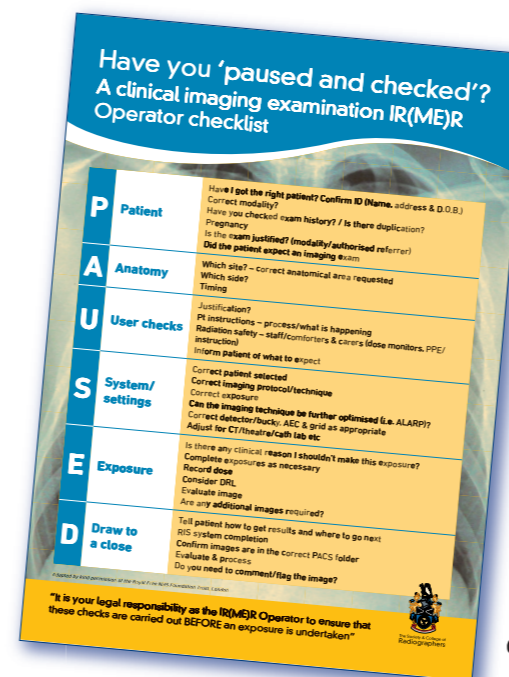
Departments of diagnostic radiology are advised to obtain a copy which is available at

<https://www.crcpress.com/Clarks-Positioning-in-Radiography-13E/Whitley-Jefferson-Holmes-Sloane-Anderson-Hoadley/9781444122350> (£99.00)

SAVE 15% and receive **FREE** worldwide shipping, enter code **KBP25** at checkout. More information here: <http://bit.ly/clarkscrc>

RPC News

Society of Radiographers aims to help reduce patient identification errors



The Society of Radiographers (SoR) has recently released a new "Paused and Checked" poster to go alongside new guidance for a six-point patient identification check. Referrer error is one of the main causes of incidents in diagnostic radiology, being attributable for 24.2% of the incidents reported to the CQC in 2014. A six-point check has been recommended to help combat these errors. This consists of the usual three-point demographic checks to correctly identify the patient, as well as checking with the patient the site/site to be imaged, the existence of previous imaging and for the operator to ensure that the correct imaging modality is used. The SoR poster is expected to help

reduce errors, the most common of which is an X-Ray of the wrong anatomy/laterality, by ensuring that operators take longer to pause and review the referral before proceeding with the exposure. The poster can be

freely downloaded from the SoR website at '<http://www.sor.org/news/have-you-paused-and-checked>'. RPC recommends that the poster should be displayed clearly in all radiology departments to help reduce the likelihood of radiation incidents resulting from operator or referral error. Poster reproduced by kind permission of the SoR.

Welcome to the latest edition of RPC's occasional newsletter

We recognise that all of our readers have busy working lives so we have collated a number of articles on current topics, so there is no need for you to trawl through the numerous reports and guidance that have been published recently.

Please let us know if there are any topics that you would like us to feature in future issues by dropping an e-mail to: info@sghrpc.co.uk

Best wishes

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Editor

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THE RADIOLOGICAL
RPC
PROTECTION CENTRE
Incorporating The John Perry Laboratory

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Government adopts new National Diagnostic Reference Levels

Those of a more inquisitive nature may have pondered about the difference between a 'National Reference Dose' and a 'National Diagnostic Reference Level'. This article will hopefully provide clarification. In brief, there is no difference, they are the same set of values but the terminology depends on which body has issued the data.

Public Health England (PHE) (formerly HPA and NRPB) periodically perform national patient dose surveys for diagnostic X-ray imaging, in which they call the representative dose for each procedure the 'National Reference Dose', this being derived from the third-quartile value (i.e. 75% of exposures being below this level). The IR(ME)R regulations require an employer to compare their local doses to the 'National Diagnostic Reference Level', a legal term used to define benchmark dose values that should not be exceeded in normal practice.

The DoH formally set NDRLs in 2004. The dose values for the NDRLs were taken from the NRPB national reference doses of the time. However, despite a series of subsequent dose reports from NRPB (and subsequently HPA) proposing lower national reference doses, the DoH never formally implemented these values as new NDRLs. The official NDRLs for 2004 became unrepresentative of good practice and could

not be used as a guide to optimisation.

In January 2016 Dept of Health appear to have resolved this matter by formally setting new NDRLs. These comprise the latest recommended reference levels from PHE for CT, general radiography, fluoroscopy and dental radiography. Full details can be found at: <https://www.gov.uk/government/publications/diagnostic-radiology-national-diagnostic-reference-levels-ndrls>

The practical implications for your local dose audits will be small as you should already be using these doses as reference levels. However, it is now mandatory to use the new values when setting local DRLs in accordance with the IRMER regulations. The new NDRLs are available via the latest version of our IRMER handbook, as well as in the DRL spreadsheet that is available via our website. Please contact RPC (info@sghrpc.co.uk) for further information.

MHRA updates its guidance on Medical Laser Safety

The Medicines and Healthcare products Regulatory Agency has recently updated its guidance on the safe use of medical lasers and IPLs. The new guidance, entitled "Lasers, intense light source systems and LEDs – guidance for safe use in medical, surgical, dental and aesthetic practices" was published in September 2015 and replaces MHRA DB2008(03) of the same name. The new guidance is very similar to its predecessor and the practical impact on users will be very small. The role of the Clinical Laser Expert has been maintained, although the guidance recognises that this arrangement may not be suitable at all establishments and recommends that the advice of the LPA be sought. The guidance has been updated to include information on current uses of medical lasers and IPLs and the references section has been comprehensively overhauled to ensure that it is consistent with current

legislation on non-ionising radiation. The new laser classification system is also described. The document states that it is good practice for staff to attend Core of Knowledge training at least every five years to maintain levels of awareness of laser safety, which corresponds with RPC's current advice on update training.

The guidance is available as a free download at: <https://www.gov.uk/government/publications/guidance-on-the-safe-use-of-lasers-intense-light-source-systems-and-leds>

The implications for our customers are minimal and your existing LPS Handbook largely covers the relevant requirements. RPC may provide further updates in due course but no action is required in the interim. Customers are encouraged to download the document as a useful source of reference.

Latest COMARE report on patient dose in CT

The sixteenth Committee on Medical Aspects of Radiation in the Environment (COMARE) report reviews patient dose data from CT examinations and discusses strategies for dose reduction. Unlike members of staff, patients are not subject to dose limitations. However, the Ionising Radiation (Medical Exposure) Regulations 2000 aim to ensure that doses are kept as low as reasonably practicable, whilst producing images that provide the required clinical information. The number of CT scans performed annually in the UK has been rising steadily since the 1990s, but surveys have found large discrepancies between the doses received from similar examinations at different hospitals. For these reasons, restricting doses from CT is seen as one of the most significant current challenges in radiation protection.

Some adverse effects of ionising radiation only occur above a certain threshold dose and become more severe as the dose increases beyond this point. Examples include radiation burns and cataracts. Tissue reaction effects are not expected as a result of exposure from CT scans provided they are carried out correctly. However, the ICRP gives the threshold dose for cataract induction as approximately 500 mGy for acute or fractionated exposures and the dose to the lens for a single whole brain CT scan has been estimated as 50-100mGy. As such, it is important to weigh the potential benefits against the cataract risk from the cumulative dose if a series of head CT scans is to be performed.

The main cause for concern about radiation doses from CT examinations is the associated risk of cancer induction. This varies depending on sex and age. Paediatric patients are at the most risk, since radiation-induced solid cancers take years to develop and also because their tissue proliferates more rapidly. Some individuals are genetically predisposed to be highly sensitive to ionising radiation, although such individuals will be hard to identify. All examinations must be justified on an individual basis by a practitioner before they take place. The potential benefit from having the examination is weighed against the associated risks. The risk should be considered in light of the clinical context. For example, pancreatic cancer has a 5 year survival rate of 2%, so a CT scan is easier to justify based on the lower life expectancy.

Technological advances have helped to

dramatically reduce doses from CT. Automatic exposure control adjusts the tube current according to patient size and spatial variations in attenuation. The approach of adjusting the tube current to allow higher image noise levels for larger patients (and give lower noise for smaller patients) is being developed by manufacturers and has already been implemented by one. The tube voltage should be varied on an individual basis according to patient size and the clinical question to be answered. Manufacturers are starting to offer automatic voltage modulation.

Following the findings of the COMARE report, we recommend the following dose reduction strategies:

- **Ensure that standard operating procedures are being followed and that these include dose reduction techniques.**
- **Ensure operators are properly trained in how to use inbuilt dose reduction features, including automatic current modulation.**
- **Consider using alternative non-ionising modalities such as MRI or ultrasound, where appropriate.**
- **Begin to introduce adaptive statistical iterative reconstruction, if available. This allows the patient dose to be reduced whilst maintaining the same level of image noise.**

The full COMARE report can be downloaded at www.gov.uk/government/collections/comare-reports. Please contact RPC (info@sghrpc.co.uk) if you require further advice on CT optimisation.

New professional guidance on the implementation of IRMER published

The British Institute of Radiology, Society of Radiographers and the Royal College of Radiographers have recently published a joint document entitled "A guide to understanding the implications of the Ionising Radiation (Medical Exposure) Regulations in diagnostic and interventional radiology" (available at http://www.bir.org.uk/media/209703/bfcr152_irmr.pdf).

This gives some useful information about the practical implementation of IRMER and the document seems to be cited by Care Quality Commission inspectors during their IRMER inspections.

Although most of the advice is fairly familiar to those with a good working knowledge of IRMER, the document emphasises certain areas of compliance which may currently be neglected. For example, there is a clear requirement to document equipment-specific training for operators. This must demonstrate competence in all functions of imaging equipment over which the operator has control. Such training must also include radiologists and other doctors who are entitled to act as IRMER operator.

The document also makes clear the requirement for competency assessments for those persons acting as referrer, practitioner and operator under IRMER. This should give details of an individual's scope of entitlement to act in these roles. It should also make clear that an individual is competent in functions such as patient identification and carrying out pregnancy enquiries, as well as specific areas such as a quality assurance. Competence in all areas must be signed off by a suitably-authorized person. Readers are advised to consult the document for further examples of such requirements.

The advice given in the document is largely incorporated in RPC's latest IRMER procedures template. However, we are making a few changes to the template as a result of the document and a new IRMER handbook will be available to all customers from mid-2016.